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Application Number	09/934,320
Filing Date	August 21, 2001
First Named Inventor	Craig S. Calvert
Group Art Unit	2128
Examiner Name	Akash Saxena
Total number of pages in this submission	Attorney Docket Number PM 99.061

## ENCLOSURES (check all that apply)

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## SIGNATURE OF APPLICANT, ATTORNEY OR AGENT

Firm or Individual Name	Brent R. Knight, Reg. No. 54,226 ExxonMobil Upstream Research Company
Signature	<i>Brent R. Knight</i>
Date	December 4, 2006

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES**

In re application of	§	Confirmation No.: 7470
Craig S. Calvert	§	
	§	
Serial No. 09/934,320	§	Examiner: Akash Saxena
	§	
Filed: August 21, 2001	§	Art Unit: 2128
	§	
Title: "Method for Constructing 3-D	§	
Geologic Models by Combining	§	
Multiple Frequency Passbands"	§	

MS: Appeal Brief - Patents  
Commissioner for Patents  
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Alexandria, VA 22313-1450

**REPLY BRIEF**

Sir:

**REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41**

This Reply Brief is being filed in response to the Examiner's Answers mailed October 2, 2006 and October 20, 2006. The Examiner is hereby authorized to charge the assignee's Deposit Account No. 05-1328 for any necessary fees.

### **REMARKS**

In the Examiner's Answers, the Examiner further clarified certain aspects of the rejections. In this response, Appellants respectfully traverse the rejections and resubmit the previous arguments in the Appeal Briefs submitted June 30, 2006 and November 15, 2006, which are hereby incorporated by reference. Further, Appellants address specific assertions made by the Examiner in the Examiner's Answer.

In the Examiner's Answer, the Examiner asserted that the initial frequency passband model is taught by at least one frequency slice in Etgen and that assignment of rock properties to a velocity model and the subsequent conversion of the velocity model into frequency slices corresponds to "assigning values for at least one rock property in each initial frequency-passband model," as recited in claim 1. *See* Examiner's Answer mailed October 20, 2006, pages 4-6. Further, the Examiner asserted that the "ordering of this step is not relevant as frequency slice (passbands) already have rock properties assigned to them," and that "since Etgen uses the same method, the order of operation does not affect the outcome." *See id.* Appellants respectfully traverse these assertions.

To begin, Appellants submit that a frequency passband model is not a model of velocity or of frequency. Again, as noted in the Appeal Brief, it should be noted that a frequency passband model is a model of some property of the subsurface that is limited in frequency bandwidth. In Etgen, the frequency slices represent amplitude data that is limited in frequency content, not velocity. *See* Etgen, col. 17, lines 28-63. In contrast, the frequency passband models of the present application are frequency-limited models (volumes) of rock properties, not of amplitude values. As such, a model of velocity or of frequency is not equivalent to a frequency passband model.

Further, Appellants note that claim 1 clearly recites "generating an initial frequency-passband model of the subsurface earth volume for at least one frequency passband" and "assigning values for at least one rock property in each initial frequency-passband model." That is, the values for at least one rock property are assigned to the initial frequency-passband model. These recitations are not disclosed or suggested by Etgen, which does not disclose or suggest assigning the rock property values to the frequency slices. The process in Etgen involves forming a velocity model, migrating the velocity model into frequency slices,


and combining the frequency slices into a single composite volume. *See* Etgen, col. 5, line 40 to col.7, line 35. As such, it appears that the Examiner is improperly relying on hindsight, not the teachings in Etgen, to modify the method disclosed in Etgen to attempt to support the rejection of the claimed subject matter. In addition, it should be noted that each horizontal layer of the velocity model in Etgen defines an interval of constant velocity, which may have varying rock properties within the layer if they are not used to compute the amplitude or travel time of the wave field. *See* Etgen, col. 17, lines 47-57. Yet, rock parameters that are used to compute the amplitude or travel time of the wave field may vary only in the depth direction for the  $V(z)$  embodiment. *See* Etgen, col. 17, lines 57-63. As such, it appears that the rock parameters in velocity model of Etgen may be limited for certain situations.

### CONCLUSION

In view of the above remarks, Appellants respectfully submit that the Examiner has provided no supportable position or evidence that claims 1-29 are rendered obvious in view of the prior art references. Accordingly, Appellants respectfully request that the Board find claims 1-29 patentable over the prior art of record and reverse all outstanding rejections. It is believed that no additional fee is required to accompany this Reply Brief, however, if any fees are required please charge any fee which may be due to our Deposit Account No. 05-1328. If Examiner wishes to discuss this application with counsel, please contact the undersigned at (713) 431-4563.

Respectfully submitted,

Date: 4 December 2006

  
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